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# Networks of meaning and the bicultural mind: A structural equation modeling approach

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## Abstract

The paper examines cultural frame-switching among bicultural participants at the level of associated meanings. Bicultural participants of Greek descent who live in the Netherlands were randomly primed with either Greek or Dutch cultural symbols and language. A monocultural Dutch group in the Netherlands and a monocultural Greek group in Greece, were involved as control groups. Structural equation modeling indicated that the Greek participants in Greece and the bicultural participants primed with Greek culture had a similar pattern of associations. This pattern differed from that of the Dutch participants and the participants primed with Dutch culture. Thus, the two different monocultural association patterns were replicated among bicultural individuals. The findings show that meanings are affected by cultural frame-switching, and provide further support for the dynamic constructivist approach.

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**Keywords:** Biculturalism; Frame-switching; Meaning networks

Using structural equation modeling, this paper tests a critical idea of the dynamic constructivist approach to cultural frame-switching in bicultural individuals, namely that frame-switching occurs in terms of associated meanings. A central premise of Hong, Morris, Chiu, and Benet-Martínez (2000) dynamic constructivist approach is that culture is not internalized in the form of a single integrated structure, but rather as ‘a loose network of domain-specific knowledge structures, such as categories and implicit theories’ (p. 710). Hence, bicultural individuals are assumed to have different cultural meaning systems that become activated or operative in response to situational cues (Higgins, 1996; Hong, Benet-Martínez, Chiu, & Morris, 2003). This assumption implies that the relationships between concepts is important. The interconnected constructs or modules of knowledge will have stronger or looser connections

depending on culturally bound meanings and experiences (Bruner, 1990; Hong et al., 2000). Therefore, in studying how culture informs behavior, it is important to focus on the differences in patterns of connotations and whether these can be replicated on the level of the bicultural mind. To our knowledge, however, cultural frame-switching research has focused only on differences in mean scores.

For example, in their experimental research (2000; see also Benet-Martínez, Leu, Lee and Morris, 2002; Hong, et al., 2003) used cognitive priming techniques and examined cultural frame-switching in relation to attribution tasks. They found that westernized Chinese students in Hong Kong were more likely to give situational explanations when their Chinese cultural knowledge was activated than when an American cultural priming condition was used. The same results were found among Chinese American students in California. Other experimental studies have reported similar results, not only for attributions but also for self-evaluations, attitudes and value endorsement (e.g., Ross, Xun, & Wilson, 2002; Verkuyten & Pouliasi,

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2002, 2006). All these studies have used multivariate and univariate analyses with post hoc comparisons to examine differences in mean scores. The central question in these analyses is whether the mean scores of the bicultural participants are culturally prime consistent and correspond with the familiar differences between collectivistic and individualistic cultures.

In contrast, the present study examines the cultural meanings of specific constructs among bicultural individuals by using a combination of exploratory factor analysis and structural equation modeling. In this way, we investigate construct (in)equivalence between the two cultures of comparison: the Dutch and Greek. It is our intention to show that a structural equation approach is an important addition to the existing mean-score-oriented analyses of biculturalism that do not examine the patterns of meanings. Data were gathered among bicultural individuals of Greek descent living in the Netherlands. A group of monocultural Dutch people in the Netherlands and a group of monocultural Greek people living in Greece were included as control groups. We examined whether the patterns found for the experimentally primed bicultural individuals (Dutch cultural identity or Greek cultural identity) were similar to the patterns for the corresponding monocultural groups.

### Culture-specific meanings

Traits, norms and values can have different connotations depending on the language and cultural context in which they have evolved and function. Ho (1996), for example, has argued that the concept of 'filial piety' has broader connotations in the Chinese culture than in the North American context. In the Chinese context it is more strongly associated with taking care of one's parents, coping with their expectations and treating them with respect. Another example is that the notion of honor is more closely related to family and social interdependence in Mediterranean countries such as Spain and Greece than in north-western European countries such as the Netherlands (e.g., Gregg, 2005; Rodriguez, Mosquera, Manstead, & Fischer, 2002).

Typically, the distinction between individualism and collectivism is used to make sense of these cultural differences. Although this distinction has been criticized (e.g., Fiske, 2002; Gregg, 2005) it is helpful in describing aspects of particular worldviews and it provides a way of making specific predictions about how the bicultural mind works. For example, focusing on personal development and individual goals, and expressing oneself and communicating directly, are key concepts in a more individualistic context. In contrast, in a more collectivist context, the emphasis is more on establishing and maintaining harmonious relationships. Interdependence entails being receptive to others and developing a motivational system in accordance with obligations and anticipated expectations of close others rather than focusing on personal needs and goals (Oyserman,

Coon, & Kemmelmeier, 2002; Kanagawa, Cross, & Markus, 2001; Markus, Kitayama, & Heiman, 1996).

Hofstede (1980) argues and shows that individualism in the workplace implies an emphasis on personal autonomy, an appreciation of being direct as well as an emphasis on personal time and free choice. In contrast, in more collectivist cultures job stability and hierarchy are relatively more strongly emphasized. Kim and Sharkey (1995) found in organizational settings that Euro-Americans endorse clarity, i.e., making one's intentions explicitly clear, while Asian-Americans were more concerned with efforts to avoid hurting the feelings of the others. Triandis (1990) has specified that in an individualistic context self-reliance has the connotation of personal independence, 'being able to do your own thing', whereas in a collectivist culture it elicits a more relational-oriented meaning, such as 'not being a burden on your ingroup'. Furthermore, the key dimensions relating to 'friendship' have been found to differ between individualist and collectivist cultures. In the former, friendship is more closely linked to ideas about personal development, openness and life satisfaction, whereas in the latter, it is related to issues of interdependency, strong sensitivity to intimacy and expectations of mutual loyalty and obligations (Argyle, Henderson, Bond, Iizuka, & Contarello, 1986; Sheets & Lugar, 2005; Verkuyten & Masson, 1996).

Research has shown that Greek culture is more collectivist than Dutch culture (Hofstede, 1980; Triandis et al., 1986). Traditionally, in Greece there is a relatively stronger emphasis on collectivist orientations and values than in the Netherlands. Although, over the years, extensive individualization of Greek society has taken place (Georgas, 1989), important differences remain (see Georgas et al., 1997; Verkuyten & Pouliasi, 2002, 2006). For most Greeks, friendship and family expectations are fundamental concerns. Additionally, it has been found that Greeks maintain ingroup closeness, e.g., through more frequent personal contact, and have stronger emotional bonds in a wider network of family relations than the Dutch do. Values of respect, and meeting the family expectations also fuel achievement and influence performance related motivation at work and school.

We focused on the conceptual features related to the constructs of 'work', 'friendship', and 'the self'. There were two reasons for doing so. One is that these constructs have been highlighted in cross-cultural work. The other is that in a pilot study we found these constructs to be relevant in both the Dutch and the Greek culture. Furthermore, in a previous analysis we found for these constructs clear differences in mean scores between samples from both cultures, as well as a pattern of prime consistent responses in bicultural individuals (Verkuyten & Pouliasi, 2006).

In general terms, we expected that for the Greek participants in Greece (a) the expectations of close others (family) were most likely to positively relate to their work attitudes, (b) friendship would be understood as signifying an intimate, close and trustful relationship and (c) the self

would be perceived in terms of being emotional, collectivist, modest, and enjoying life. The Dutch participants, on the other hand, were expected to (a) associate work-related values with more individualistic ideas, such as effective use of personal time, planning and making one's feelings and intentions explicitly clear, (b) to understand friendship as related to life satisfaction, and (c) to value a self-reliant, modern, and independent self.

For our study, however, the critical hypothesis is that the pattern of associations for the bicultural individuals in the Greek priming condition will be similar to the monocultural Greek participants in Greece, whereas the pattern of associations for the bicultural individuals in the Dutch priming condition will be similar to the monocultural Dutch participants. It is this prediction that forms the critical test for the idea that cultural frame-switching occurs among biculturals in terms of associated meanings, as implied by the dynamic constructivist approach.

## Methods

### *Participants*

The study was carried out among 408 bicultural and monocultural participants. Of the monocultural participants, 110 were recruited in Greece (Athens) and 92 in the Netherlands (Amsterdam). The bicultural sample consisted of participants of Greek descent between 18 and 70 years of age that were proficient in both the Greek and the Dutch language. The mean score for self-reported Greek language proficiency was 6.15 ( $SD = 1.01$ ) and for the Dutch language it was 5.86 ( $SD = 1.05$ ). However, to increase response reliability regarding culture-bound connotations (Ralston, Cunniff, & Gustafson, 1995; Bond, 1983), we only included those responses from bicultural individuals that met the criteria for self-reported command of both languages (scoring above the neutral-midpoint on a 7-point Likert-type scale). In total, the present analysis is based on 179 bicultural participants. The mean number of years that these participants had been living in the Netherlands was 21.5 ( $SD = 10.11$ ) and their average age was 38.9 ( $SD = 12.79$ ). Of the total number of participants, 51% were males and 49% females. There were no gender and age differences between the monocultural and bicultural groups.

### *Design*

An experimental questionnaire study was carried out. There were two versions of the questionnaire. We used iconic cultural symbols and language to prime Dutch and Greek cultural identity. Similar to other studies (e.g., Hong et al., 2000, 2003; Verkuyten & Pouliasi, 2002, 2006), the participants were presented with pictures of either Dutch icons (national flag, a windmill, and a person in traditional clothing) or Greek icons (national flag, the Acropolis, and person in traditional clothing). In addition, the question-

naires were in either Dutch or Greek. In other words, the study was introduced and conducted in one or the other language. Following Krauss and Chiu (1998), we considered the combination of icons and language an effective means of activating the two different cultural frames.

The group of monocultural Dutch participants completed the Dutch version of the questionnaire and the monocultural Greek participants in Greece completed the Greek version. In addition, because we wanted to have four groups more or less equal in terms of demand-load, a between-subjects design rather than a within-subjects design was used. Hence, the bicultural participants were presented randomly with either the Dutch or the Greek version of the questionnaire. For our present purposes, we will refer to the former group of bicultural participants as the Dutch-primed-group and the latter as the Greek-primed-group.

### *Measures*

For the present study, we began with a preliminary survey to identify important cultural orientations endorsed by people in Greece and in the Netherlands. To identify typical Greek orientations we conducted interviews and face-to-face discussions with Greeks who had recently come to the Netherlands (less than 1 year prior to the interview), and we did the same by email with Greeks in Greece. Based on this information an exploratory questionnaire with 37 items was developed and presented to 22 people living in Greece. The participants were found to strongly endorse the importance of friendship, family, modesty, and respect for tradition.

To identify Dutch cultural orientations we held interviews and discussions with Dutch people and examined Dutch newspapers. We found that the idea of becoming a self-reliant and independent (in Dutch, 'zelfstandig worden') individual was emphasized. The notions of 'clarity' (in Dutch 'helderheid' and 'duidelijkheid'), 'discipline' (in a working context; in Dutch 'hard werken'), 'effective use of time', and 'good planning' were also emphasized and were related to performance and achievement in school and at work.

In a previous analysis of the present data we followed existing research on cultural frame-switching and examined differences in mean scores for the importance assigned to various constructs (Verkuyten & Pouliasi, 2006). Here we want to go a step further and test cultural frame-switching in bicultural individuals in terms of shifting patterns of meaning. For doing so, two things are important. One is that the items selected for analysis must be directly observed endogenous variables as this is mandatory for the structural equation technique we used. The other is that the selected items must show clear and substantial differences between the two cultural contexts. Therefore, the present analysis focuses on those items that show significant mean score differences between the monocultural Dutch and Greek sample, as well as prime consistent

responses among the biculturals. Hence, for our present purpose we used a limited set of items.

The items selected were on values related to ‘respect for tradition’, ‘respect for parents’ and ‘modesty’, which were more highly endorsed by the Greek and the Greek-primed participants, and ‘discipline’ (in the sense of hard working), ‘clarity’ (in the sense of clearly expressing ones wishes and desires), and ‘effective use of time’ as values more strongly endorsed by the Dutch and the Dutch-primed participants (see Verkuyten & Pouliasi, 2006). For ‘friendship’ we used the single item (out of four) that elicited the main difference between the two target cultures, namely ‘you can’t live without real, good friends’. Using 7-point scales, the participants were asked to indicate their endorsement of these values.

In addition, to measure self-related values, the participants were presented with trait adjectives taken from both cultural backgrounds. They were asked to indicate to what extent they identified themselves with a list of six bi-polar traits: ‘individualist’ (versus being ‘collectivist’), ‘modern’ (versus being ‘traditional’), ‘modest’ (versus being ‘impertinent’), ‘dependent’ (versus ‘independent’), ‘emotional’ (versus ‘rational’), and ‘not-enjoying life’ (versus ‘enjoying life’). Being individualist, modern and rational were found to be more typical of Dutch culture, while the other adjectives were considered more typical of Greek people (Verkuyten & Pouliasi, 2006). The participants were asked to rate their agreement on a 7-point scale marked 3 to 1 for the first trait, 0 in the middle for a neutral choice, followed by 1 to 3 for the second trait. Thus, higher values indicate greater agreement with either of the two opposite traits. All answers were recoded to a scale ranging from 1 to 7 where higher values indicate stronger agreement with the second adjective.

All questions used were originally constructed in both target languages and then translated. Subsequently, monocultural reviewers assessed the translations for any linguistic or comprehension problems. Three monocultural Dutch and three monocultural Greeks, unaware of the underlying research questions, performed a final proofreading of the questions.

## Results

To examine cultural frame-switching in terms of patterns of associations, we used a combination of exploratory factor analysis and structural equation modeling (SEM; see Van de Vijver & Leung, 1997; Bollen, 1989). For the latter we used the package AMOS (Byrne, 2001).

### *Identification of relevant factors*

We first examined the correlations for the two monocultural control groups separately by performing principal component analyses (PCA). We used the Oblimin rotation method with Kaiser normalization and a  $>.30$  criterion for item-scale correlation extraction. For the monocultural

Dutch group, four factors were found explaining 22.5%, 16.9%, 14.3% and 10.7% of the variance, respectively. For the Greek group also four factors explained 18.4%, 14.9%, 14.0% and 12.16% of the variance.

For the Dutch group, nine items loaded on the first three factors and only one item (‘respect for parents’) loaded on the fourth factor. The other two items did not load ( $<.30$ ) on one of the four factors. Thus, for the Dutch we identified three latent factors with nine items. SEM requires that at least two items load on a latent factor and therefore we used these nine items in the further analyses. For the Greek group, ten items loaded on the four factors with at least two items loading on each of the factors. Thus, for the Greeks, we distinguished four latent factors.

The selection of items for further analyses contains only those that cluster together and are indicative of divergent patterns for each culture. Items that were important in just one of the two cultures (such as ‘modesty’ and ‘modest’, which only figured strongly in the Greek data) were not included.

### *Establishing the baseline models*

Using the first three latent factors of both factor models, we compared the underlying dimensions of the concepts related to ‘work’ (working hard), the need for ‘friendship’ and the self-aspect of being ‘dependent’. The fourth factor in the Greek model was related to the self as being ‘emotional’.

In defining the two distinct models we first tested the Greek and the Dutch model for each monocultural group separately using the AMOS program. After some small amendments following modification indices, the baseline models with identical path diagram structure were established. The following specifications were used. The latent factors were left free to covary. Each observed variable was fixed to load on the specific latent variable in which it most strongly correlates with the other observed variables, following the clustering in the exploratory factor analysis. The first loading on each factor was constrained to be equal to 1.0 for identification purposes. We allowed cross-loadings when a factor was explained with only two variables, because this is necessary in structural equation modeling (Bollen, 1989; Byrne, 2001). In addition, we left the error variance of each observed variable unrestricted, whereas we fixed their regression weights to the endogenous variables to 1.0. The overall summaries of the estimation process provided by AMOS showed that both baseline models were overidentified, indicating that the number of estimable parameters is less than the number of variances and covariances of the observed variables (Byrne, 2001). This situation allows for the rejection of the models making appropriate tests possible.

The best factor solution was determined by using  $\chi^2$  tests. Additional indices were used to estimate the goodness of fit of the models. One is the Goodness-of-Fit (GFI) that measures the relative amount of variance and covariance



jointly accounted for by the model. Another is the Root Mean Square Error of Approximation (RMSEA) that measures the discrepancy per degree of freedom. The more variance accounted for by the model, the better the fit. Two more fit indices were used: Tucker–Lewis Index (TLI) and,

because of the relative small sample size (Bollen, 1989), the Comparative Fit Index (CFI).

The two Figs. 1 and 2 show different patterns for each cultural group. For the first three latent factors in both baseline models we compared the three underlying

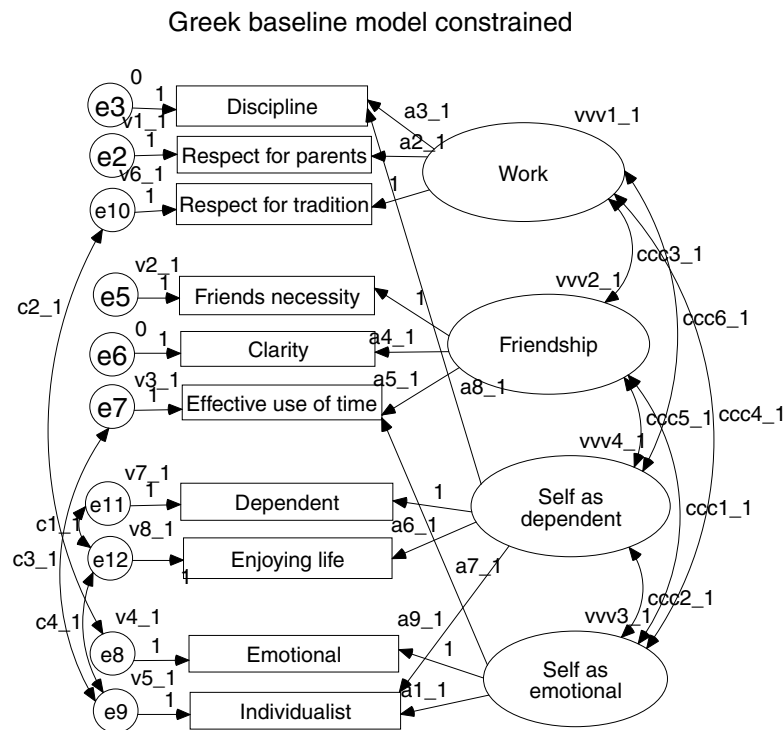


Fig. 1. Greek baseline model with equality constraints for all factor loadings and all latent factor variances and covariances (includes two error variances).

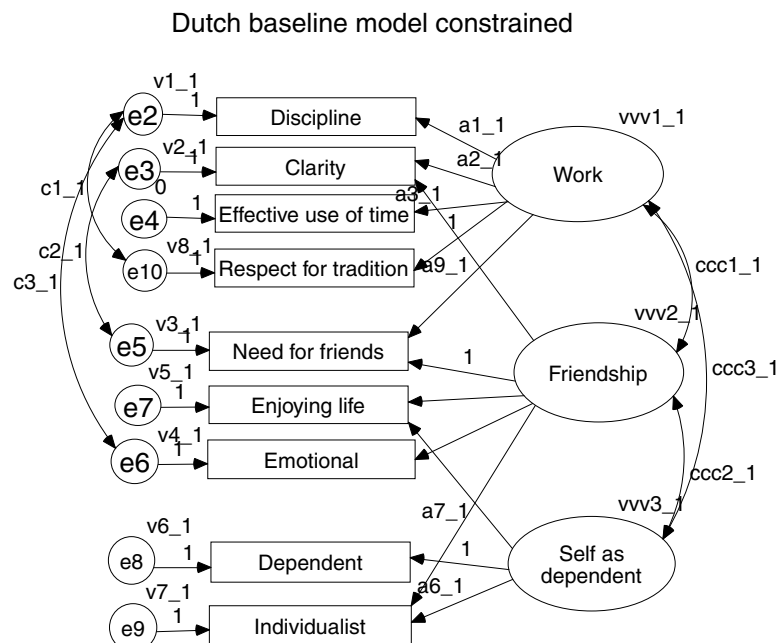


Fig. 2. Dutch baseline model with equality constraints for all factor loadings (except for 'friendship'), all latent factor variances and covariances (includes one error variance).

dimensions. Within the Greek model's latent factor 'work', 'discipline' (in the sense of working hard) relates most strongly to 'respect for parents', and 'respect for tradition'. Within the corresponding Dutch factor, we found the same item, as expected, to correlate highly with 'effective use of time' and 'clarity' (in the sense of clearly expressing ones wishes and desires), followed by 'respect for tradition'. But surprisingly, within the Greek model, 'effective use of time' and 'clarity' (in the sense of clearly expressing one's wishes and desires) are most strongly linked to 'need for friends' in the latent factor 'friendship'. In the corresponding factor for the Dutch group, 'need for friends' is associated with 'enjoying life', and being 'emotional'. In the Greek model 'being dependent' appears to be strongly and negatively correlated to 'enjoying life', while for the Dutch model 'being dependent' is opposed to 'individualist'. In the Greek model 'emotional' is negatively associated with 'individualist'.

#### Across-group comparisons

Having established the validity of the four-factor Greek baseline model and the three-factor Dutch baseline model, we next tested our central hypothesis. We followed the standard procedure for testing the across-group invariance of the models with a global test on the equality of covariance structure across the Greek and the Greek-primed-group and across the Dutch and the Dutch-primed-group simultaneously (Byrne, 2004). These tests provide the baseline fit values against which, in the next steps, all subse-

quently imposed constraints are compared. In this way, we fixed (labeled) parameters in an increasingly restrictive fashion and then tested the invariance of the constrained models across the dual-groups.

In testing the equality of covariance structure of both models, we found that the null hypothesis was confirmed in all tests, both in the single-group analysis and the across-group analysis. As shown in Table 1, the fit was adequate for both dual-group tests. The overall  $\chi^2$  value when both baseline models were simultaneously estimated was summative as required, and equaled the  $\chi^2$  values of the models when tested separately for each group. Additionally, the other fit indices in Table 1 support this conclusion. Thus, the results indicate that the Greek baseline model is entirely adequate for the Greek-primed participants. Furthermore, the analysis for the Dutch and the Dutch-primed-group also confirmed the adequacy of the Dutch baseline model for the Dutch-primed participants. Hence, the results indicate that the factorial structure of both baseline models replicate across the relevant bicultural groups.

#### Nested comparisons

Subsequently, a sequence of nested comparison models was tested (Byrne, 2001, 2004) in which successive additional constraints were applied to the baseline models starting with (a) the factor loadings, followed by (b) the latent variances and covariances, and finally (c) the error variances and covariances. We specified the equality of constraints by labeling them in the two graphical representations of the

Table 1  
The Greek and Dutch baseline models

Model description	Groups	$\chi^2$	df	<i>p</i> -value	GFI	CFI	TLI	RMSEA
Greek factorial structure	Greek+Greek-primed	32.046	48	0.963	0.969	1.000	1.209	0.000
	Greek	10.867	24	0.990	0.980	1.000	1.396	0.000
	Greek-primed	21.225	24	0.625	0.956	1.000	1.065	0.000
Dutch factorial structure	Dutch+Dutch-primed	32.554	36	0.633	0.963	1.000	1.036	0.000
	Dutch	21.980	18	0.233	0.953	0.946	0.898	0.049
	Dutch-primed	10.575	18	0.912	0.974	1.000	1.133	0.000

Goodness-of-fit statistics for tests of structural invariance. Results from across-group and separate validation.

Table 2  
Goodness-of-fit statistics for the Greek and Dutch constrained models

Greek constrained model simultaneously tested across Greek and Greek-primed groups	$\Delta$ df	$\Delta\chi^2$	<i>p</i> -value
1. Measurement weights constrained equal (all latent factors)	9	8.895	0.447
1.1 Latent variances and covariances constrained to be equal	10	29.862	0.001
1.2 Latent covariances (only) constrained equal	6	2.621	0.855
1.2.1 Measurement residuals constrained equal	12	24.292	0.019
1.3 Latent variances only constrained equal	4	14.408	0.006
Dutch constrained model simultaneously tested across Dutch and Dutch-primed groups			
1.Measurement weights except for the 'friendship' factor (a1_1 = a1_2, a2_1 = a2_2, a3_1 = a3_2, a6_1 = a6_2, a7_1 = a7_2, a9_1 = a9_2) constrained equal	6	9.567	0.144
1.1 Latent variances and covariances constrained to be equal	6	9.145	0.166
1.1.1. Measurement residuals constrained to be equal	11	25.543	0.008

Results from simultaneously tested nested model comparisons.

two models presented in Figs. 1 and 2. In each case, the invariance of the constrained models was tested across the groups with the above order.

Invariance of all four factor-loading constraints was found to be adequate in the data for the Greek and the Greek-primed participants when tested simultaneously. As shown in Table 2, comparison with the baseline Greek model yielded an adequate fit. Additional constraints on the latent variances and covariances turned out to be non-invariant across the two groups, but when the nested model was constrained with only the latent covariances, it provided an adequate fit (see Table 2). The even more constrained model with equality of all the error variances and covariances, however, reached statistical significance.

The Dutch baseline model was invariant across the Dutch and Dutch-primed groups when all factor loadings were constrained, except those for ‘friendship’ (see Table 2). Additional restrictions concerning latent variances and covariances turned out to result in fitting models in both groups too. Further limitations did not reach the necessary level of non-significance.

The results presented in Table 2 indicate that both cultural models are indeed invariant across each monocultural group and its corresponding bicultural group. Hence, we found evidence that, depending on cultural priming, biculturals follow the corresponding patterns of associations characteristic of the relevant monocultural group. The single exception appears to be ‘friendship’ for the Dutch-primed-group. For them, the modified cross-loading to the ‘clarity’ item (in the sense of clearly expressing ones wishes and desires) might well indicate that the Dutch-primed participants maintain Greek-oriented connotations in this domain.

Finally, we also cross-validated the models by applying the Greek model to the Dutch and the Dutch-primed-group, and the Dutch model to the Greek and the Greek-primed-group. In all these cases, we were unable to obtain a fit to the data, showing that the models developed meet the necessary selectivity requirements for our assumption of cultural frame-switching in terms of patterns of connotations.

## Discussion

The present examination has tried to go beyond previous experimental research on biculturalism by focusing on associated meanings and using structural equation modeling. We tried to show that cultural frame-switching in bicultural individuals involves a change in patterns of meaning. For this purpose we compared bicultural people of Greek descent living in the Netherlands with samples of monocultural Dutch participants and monocultural Greek participants living in Greece.

The key finding is that the monocultural factor models fit the data for the correspondingly primed bicultural participants. The Greek participants and those in the Greek-primed-group had a similar pattern of associations, and

this pattern differed from that of the Dutch participants and the participants in the Dutch-primed-group. The models of the latter two groups were, again, similar. Hence, the two monocultural association patterns were quite different and these differences were replicated among bicultural individuals. In the Greek context, for example, being dependent is understood as contrary to enjoying life, possibly because of the pressure of ingroup obligations (Georgas, Berry, Shaw, Christakopoulou, & Mylonas, 1996; Oyserman et al., 2002). On the other hand, in the Dutch context it is understood as being opposite to individualism, as it might express a lack of self-reliance and competitiveness (Rodriguez et al., 2002; Oyserman et al., 2002). Furthermore, in the Greek priming condition, not only was the structure of the factors reproduced but also the relative strengths of the associations. The same holds in the Dutch priming condition, with the exception of the ‘friendship’ factor. These results suggest that frame-switching occurs not only at the level of attributions and degree of value endorsement as indicated by mean score differences (e.g., Hong et al., 2000, 2003; Verkuyten & Pouliasi, 2002, 2006), but also at the level of associated meanings. These findings offer critical support for the premise of the dynamic constructivist approach that cultures are internalized in the form of different meaning systems (Hong et al., 2000).

There were also some unexpected findings. For example, the Dutch and Dutch-primed participants associated ‘effective use of time’ and ‘clarity’ to work-related values. Surprisingly, however, for the Greek and Greek-primed participants, these items were associated with friendship. This suggests that for the Greeks, ideas about using your time effectively and clearly expressing your wishes and desires is important in friendships. Some anecdotal support for this interpretation comes from three Greek interviewees from our pilot work. They were asked to describe what they mean by ‘make good use of your time’ and argued that this implies ‘having activities, interests, to go out, to meet friends and relatives to travel to study, to do things, not to waste your time without doing anything’, and ‘to work systematically, so that you finish on time and still have time to meet your friends’.

Another noteworthy finding is that among the Greek monocultural group, ‘respect for parents’ was associated with ‘respect for traditions’ and ‘discipline’, whereas among the Dutch monoculturals, parental respect was not associated with any of the other items. This might reflect the fact that in collectivist cultures values of intergenerational obedience, family integrity, and tradition are stressed, whereas in individualist cultures more emphasis is placed on autonomy and independence (Georgas et al., 1996; Kagitcibasi, 1990). This differences has also been found in comparing Greece and the Netherlands, and among Greek–Dutch bicultural early adolescents (Verkuyten & Pouliasi, 2002).

In evaluating our results, some qualifications should be considered. A strong point of our study was the use of sizeable groups of bicultural participants that were proficient



in both languages together with monocultural participants in two national contexts. However, we focused on a rather limited number of items and latent factors, namely those that indicated clear differences between both monocultural groups and prime consistent responses of biculturals (Verkuyten & Pouliasi, 2006). Hence, our analysis can be seen as a first step in a new and promising direction. Future studies might want to adopt and elaborate on the current approach. In doing so, it also seems interesting to consider the extent and nature of biculturalism, the level of acculturation, and the degree of cultural identification so that differentiations within the group of bicultural participants can be made (Benet-Martínez et al., 2002; Haritatos & Benet-Martínez, 2002; Verkuyten & Pouliasi, 2006).

Another qualification is that some might argue that language rather than culture is responsible for the cultural priming effects found. Following previous studies (e.g., Hong et al., 2000, 2003), cultural icons and language were used experimentally to activate different frames. Previous studies have found that language serves as a situational cue for the flexible use of cultural self-construals among bicultural individuals (e.g., Kemmelmeier & Cheng, 2004; Ross et al., 2002; Trafimow, Silverman, Fan, & Law, 1997). Furthermore, Ji, Zhang, and Nisbett (2004) have shown that culture can affect categorization processes independent of the testing language. Hence, it is unlikely that the effects found are unrelated to cultural framing.

In conclusion, we have tried to make a contribution to the literature on biculturalism by examining cultural frame-switching at the level of associations. By studying experimentally primed bicultural participants and by including monocultural comparison groups, we have demonstrated that meanings are affected by cultural framing. The dynamic constructivist approach helps to explain how cultural knowledge influences perceptions and behaviors. We have tried to show that this explanation should also consider the associated meanings. The analysis indicates that structural equation modeling is a useful technique for examining the bicultural mind. The technique offers a more complex understanding of cultural meanings regardless of the language used and allows for comparisons across monocultural and bicultural groups. Further, the results indicate that the question of comparability or measurement equivalence is not only important in cross-cultural work (see Van de Vijver & Leung, 1997), but also when examining biculturalism. Some constructs are not identically perceived within the two cultural contexts and bicultural individuals follow these contextual meanings in their cultural frame-switching.

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